Small
Business
Innovation
Research

Large-Aperture Holographic Optics

Ralcon Development Lab

Paradise, UT

INNOVATION

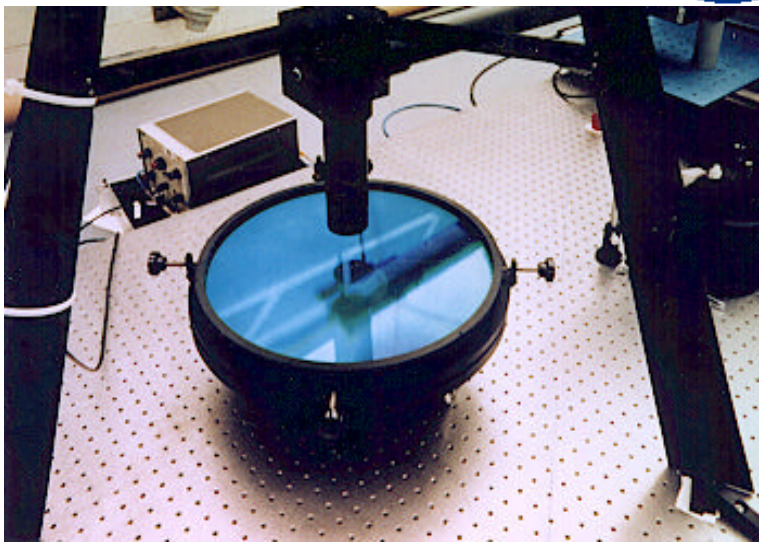
Holographic scanning and focusing collection optics that greatly simplify the opto-mechanical design of large aperture incoherent LIDAR systems in the visible and near IR regions

ACCOMPLISHMENTS

- Devised optical ray tracing tools and methods for design of holographic recording layouts.
- Implemented a full holographic construction set-up using computer generated diffractive optics and bent lenses to correct aberrations induced by wavelength change.
- Completed designs and construction of plane gratings and focusing Holographic Optical Elements (HOEs) at 532, 523, 770, 830, 1046 and 1064 nm.

COMMERCIALIZATION

- Delivered prototype LIDAR scanning and collection HOEs to HARC, ATM and ORCA. These companies will test the HOEs over the next year.
- Anticipate sales of 100 units per year at $1000 per unit.
- HOEs used in Fiberless Optical™ technology developed by Terabeam Networks, Inc. that creates a point-to-multipoint network of invisible light over a metropolitan area to connect local area networks (LANs) and the nation's wide-area networks (WANs) at gigabit speeds. The company employs more than 400 people and has raised more than $500 million in funding.



Large-Aperture Holographic Optic

GOVERNMENT/SCIENCE APPLICATIONS

- Produced several different scanners for Utah State University to expand it's LIDAR capabilities in studying atmospheric phenomena such as wind, water vapor, clouds, temperature, pressure, ozone and aerosols.
- Produced the first ever 400 mm diameter scanner and collector HOE for operation at 1064 nm. NASA uses in atmospheric boundary layer research, wind measurements, and related areas.
- NASA use includes space-borne, airborne, and ground-based remote sensing applications.
- Developing 1 m diameter HOE for UV wavelength space applications.

Points of Contact:

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Goddard Space Flight Center

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